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A development of blended information literacy learning web for Thai high school students

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Abstract

Students nowadays have to communicate with a ton of the information, since the rapid development of internet technology. Thus for, information-related skill plays an important role in students success. Blended Learning is recently used in many information literacy programs around the world, including in Thailand. Most of researcher try to integrate information literacy model into high school programs, so the aim of this research was to develop a blended learning website for high school embedded information literacy course. The blended learning website was designed from literature reviews and experts interview, then evaluated by 5 experts. A usability testing was conducted with high school student by using 1-on-1, small group and field testing method, subjects were selected from tenth-grade students at Kasetsart University Laboratory School Center of Educational Research and Development. The data were collected and analysed using content analysis and descriptive statistics. The result indicated that there was a significant difference in mean scores between pre-test and post-test.

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Keywords: Blended Learning, Information Literacy, Learning Web

1. Introduction

With the fast and continued growth of information technology, it has affected our daily live and led to a better in such things as working, entertainment, business, health care and education especially learning process in 21st century which has become integrated technology in the classroom, so that expanded learning opportunities to many students (Phusiri, 2012).

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From the literature review of the information literacy show that the students in the 21st century can easily access to the information, search engine become a part of their life, so with overused of the search engine made students' information literacy became lower than before. (November, 2010 cited in Bellanca and Brandt, 2010; Eisenberg et al., 2004). Thailand also faced the same problem, Thai students trusted in the data from the search engine and used them without critical thinking. This problem is the main caused that made the students did not understand the lesson clearly. So the appropriate way to solve this problem is the integration of information literacy instruction into the normal learning activities (Andretta, 2005)

Blended Learning is the alternate teaching method that combined the face-to-face and online instruction together, to form a flexible learning environment for students (Jonassen, 1999; Bonk and Graham, 2006; Driscoll, 2002; Singh, 2003). The blended learning is a teaching method that focused on students centered learning, from this point, students can participate more in the classroom. Moreover, this teaching method also made the students gain more motivation and enthusiasm (Dodero et al., 2001; Gulsecen, 2004; Rovai and Jodan, 2004).

Blended Learning is recently used in many information literacy programs around the world, including Thailand. Most of researcher try to develop information literacy model, but there are no suitable blended learning program for Thai high school student. So this study aimed to develop a blended information literacy learning web for Thai high school students.

2. Methodology

In this study, the researcher used Instructional System Design with ADDIE model to develop learning web that consist of 5 steps of design process as follows: Analysis, Design, Development, Implementation and Evaluation

Analysis	Design	Development	Implementation	Evaluation
Learner analysis	Planning	Web development	Try out	Web Evaluation
Content analysis	Design	Web instrument development	Implementation	Information Literacy Evaluation
Learning objective analysis				

Fig. 1. Design Process of learning web

2.1 Analysis

In this step includes the study of research and theories on the Blended Learning, Information Literacy and Learning Web. Then the researcher have analysed the three factors which were

1) Learner analysis: The learners are 30 High School students from Kasetsart University Laboratory School who have a basic ICT skill.
2) Content analysis: The subject is Thai history which Thai historical figure content.
3) Learning objective analysis. In this study, the teacher needs the students able to use a historical method to retrieve the information of the Thai historical figures.

2.2 Design

The learning web design process consisted of two steps as follows:

1) Planning: After analyzing information, the researcher put a plan for learning and developed a site map. Then planned to design a learning web follow the historical method activities which easy to use and understand navigational system for the students. So the learning web from should be interactive forms such as LMS (learning management system) or CMS (content management system).
2) Design: Before developing the learning web, the researcher created a storyboard and determined the

look and feel of the site. In this study, we use the gold brown color to give a vintage style and historical feeling. We took the subject students into consideration to design the layout of learning web. So we put the navigation bar on the left because Thai students are familiar with left justify format. Then talked over with the advisor and interviewed five experts in educational technology to get more than opinions about the learning web and improved as the suggestion.

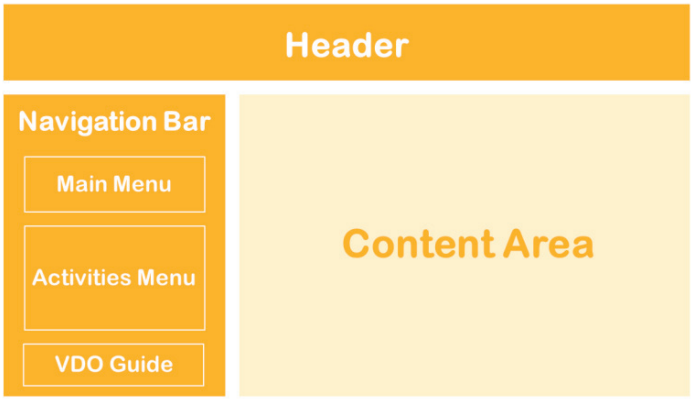

Fig. 2. The storyboard of learning web

2.3 Development

In this step we created the learning web follows the storyboard by using Joomla content management system because it is easier to create, manage the contents and conduct online test. By using the Joomla CMS, it saves time and money. Moreover, students can access the learning web at anytime and from anywhere with internet access.
The development process consisted of two parts as follows:

1) Web development: We had considered the web elements from the prototype and used them to develop the functional web site as follows: Font, Graphical Imaging, Video, Color, Icon, Button, Homepage, Learning Objectives, Content and Interactive design in the appropriate areas.
2) Web instrument development: We developed the web instrument to be an effective support learning objects in the following order:
    - an online information literacy testing (pre-test and post-test)
    - a recording form by using social bookmarking
    - an information evaluation form
    - a learning activities guide
    - a learning video guide
    - a collecting information form by using Google form
    - a subjects' opinion toward the learning web questionnaire

After developing a website for students, 5 educational technology experts were interviewed and then the experts evaluated the web by using the 5 Likert scale web evaluation form. Finally, we revised the learning web followed by advice from the experts.

Fig. 3. Example of the learning Activities

Fig. 4. The information evaluation form

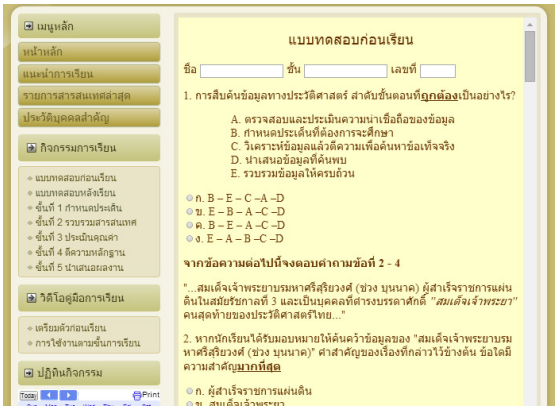

Fig. 5. The online information literacy testing

Fig. 6. Example of the learning video guide

2.4 Implementation

We attended to try out a prototype of learning web and tested all of the functionality with non-subjects in this study from Kasetsart university laboratory school by using one to one testing and 2 small groups of 3 and 9 non-subjects testing. After that, we analysed the results and modified appropriateness. Next, we implement the modified one with the 30 subjects from Kasetsart university laboratory school for 8 weeks.

2.5 Evaluation

In this step, the learning web evaluation consisted of two parts as follows

1) Web Evaluation: A 5 Likert scale web evaluation form has been created to evaluate learning web for Font, Graphical Imaging, Video, Color, Icon, Button, Homepage, Learning Objectives, Content and Interactive design by 5 educational technology experts.
2) Information Literacy Evaluation: we used the pre-test and post-test to assess the information literacy of the subjects. Then using the questionnaire to get the opinions from the subjects.

3. Results

1) The information literacy of subjects' scores of the data was analysed using mean, standard deviation, and t-test dependent were summarized in Table 1.

Table 1: The information literacy of subjects' scores of the data were analysed using mean, standard deviation, and t-test dependent.

The information literacy of subjects scores	scores	Mean ($\bar{X}$)	standard deviation (S.D.)	t	Sig.
Pre-test	30	16.37	4.75	-4.294**	000.*
Post-test	30	18.80	3.10		

** $p < .05$

From Table 1, the result indicated that the subjects had information literacy post-test mean scores higher than pre-test mean scores at .05 level of significance.

2) The subjects' opinion toward the learning web score was summarized in table 2.

Table 2: The subjects' opinion toward the learning web score

	Mean ($\bar{X}$)	Interpretation
The overall design		
1. Font		
1.1 size	4.38	Very Suitable
1.2 style	4.29	Very Suitable
1.3 font color	4.35	Very Suitable
2. Image		
2.1 consistent of the image	4.53	Most Suitable
2.2 image size	4.56	Very Suitable
3. Color		
3.1 contrast between background and foreground	4.00	Very Suitable
3.2 aesthetics	4.59	Most Suitable
3.3 different between text and hypertext	4.12	Very Suitable
4. Icon and Button		
4.1 meaning of the icon	4.24	Very Suitable
4.2 size	4.18	Very Suitable
4.3 position	4.38	Very Suitable
5. Link		
5.1 correctness of link	4.29	Very Suitable
5.2 correlate between link and information	4.38	Very Suitable
General Characteristic of the Learning Web		
1. consistent of the image	4.18	Very Suitable
2. image size	4.26	Very Suitable
Video Guide		
1. coverage of video guide	4.09	Very Suitable
2. easy understanding of the video guide	3.91	Very Suitable
3. sequence of the video guide	4.18	Very Suitable
Total	**4.27**	**Very Suitable**

Note: 4.5 - 5.0 = Most Suitable, 3.5 - 4.49 = Very Suitable, 2.5 - 3.49 = Suitable, 1.5 - 2.49 = Less Suitable, 1.0 - 1.49 = Not Suitable

From Table 2, the overall mean score of the subjects' opinion toward the learning web was "Very Suitable." When considering the details, it was found that most of the opinion were "Very Suitable," except the opinion toward the image was "Most Suitable." The figure of the learning web is shown in Appendix A.

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Appendix A. The image of the learning web